

LEXINGTON, KY.

UNITED STATES SIGNAL SERVICE

MONTHLY WEATHER REVIEW.

VOL. XVII.

WASHINGTON CITY, JULY, 1889.

No. 7.

INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for July, 1889, and is based upon reports of regular and voluntary observers of both countries.

On chart i the paths of the centres of fourteen areas of low pressure are shown; the average number traced for July during the last nineteen years being 9.8. This chart also exhibits the paths of the centres of seven depressions traced over the north Atlantic Ocean; the limits of fog-belts west of the fortieth meridian, and the distribution of icebergs and field ice during the month. The areas of high and low pressure and north Atlantic storms are discussed under their respective headings.

Chart ii exhibits the distribution of mean atmospheric pressure and temperature for the month. The mean temperature generally averaged below the normal east of the Rocky Mountains, while in the Rocky Mountain and plateau regions and on the middle Pacific coast the month was slightly warmer than the average July. At several stations in the southwestern part of the country the absolute maximum temperature was as high, or higher, than has been recorded for July during the periods of observation, while at stations in the Lake region, the upper Mississippi and upper Missouri valleys, and at Portland, Oregon, the minimum temperature was as low, or lower, than previously reported for July.

Chart iii shows the distribution of precipitation for July, 1889. The precipitation was largely in excess of the normal in areas east of the Rocky Mountains. Over the Rocky Moun-

tain and plateau regions and on the Pacific coast it was deficient, except at stations in the southern plateau region, southwestern Oregon, and northern Montana. A remarkable feature of the month was the irregular distribution of rainfall over the eastern half of the country, where large excesses and marked deficiencies occurred in limited areas. The rainfall of the month is discussed under the heading "Precipitation."

Under the headings "Local storms," "Floods," and "Drought" will be found descriptions of the more important storms, disastrous floods, and damaging drought of the month.

In the preparation of this REVIEW data from 2,218 stations have been used, classified as follows: 176 Signal Service stations; 120 monthly registers from United States Army post surgeons; 1,396 monthly registers from state weather service and voluntary observers; 23 Canadian stations; 160 stations through the Central Pacific Railway Company; 343 marine reports through the co-operation of the Hydrographic Office, United States Navy; marine reports through the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Colorado, Dakota, Illinois, Indiana, Iowa, the Iowa Weather Crop Bulletin Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, Ohio, Pennsylvania, South Carolina, Tennessee, and Texas, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for July, 1889, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on chart ii by isobars. The difference between the mean pressure for July, obtained from observations taken twice daily at the hours named, and that determined from hourly observations varies at the stations named below as follows: At Washington, D. C., Philadelphia, Pa., New York, N. Y., Boston, Mass., and Saint Louis, Mo., the mean of the 8 a. m. and 8 p. m. observations was higher by .003, .007, .006, .007, and .007, respectively, while at Chicago, Ill., the mean of the observations taken at these hours was .001 lower than the true mean pressure.

The mean pressure for July, 1889, was highest over southeastern Florida, where it rose to 30.10, at Jupiter, and was above 30.05 along the immediate south Atlantic coast and over eastern Florida. From eastern Texas eastward to the Atlantic coast and northeastward to the south New England coast, and along the immediate Pacific coast north of the fortieth parallel, the mean values were above 30.00. The mean pressure was lowest within an area extending from the lower Colorado valley northward over southeastern California and southern Nevada, where the values were below 29.80, and fell to 29.75 at Yuma, Ariz., and Keeler, Cal. On the south Pacific coast, over a greater portion of the middle and southern

plateau regions and the southeastern slope of the Rocky Mountains, in the middle Missouri valley, and from the lower Saint Lawrence valley westward to the one hundred and twelfth meridian the mean pressure was below 29.90.

Compared with the pressure chart for June, 1889, a decrease in pressure is shown, except over the southern half of Florida, in the more southern districts west of the Mississippi River, along the California coast north of the thirty-fifth parallel, and in the upper Missouri valley and the British Possessions to the northward. The greatest increase in pressure occurred in and north of northern Montana, where it was more than .05, and the greatest decrease, .05, or more, in eastern Nova Scotia, and the Atlantic coast states between the thirty-fourth and fortieth parallels. Elsewhere the changes were less than .05. In June the mean pressure was highest, 30.11, on the North Carolina coast, while for the current month the highest value, 30.10, was reported on the southeastern coast of Florida. The changes in pressure within the area of low mean pressure over the southern plateau region have been unimportant.

Compared with the normal pressure for July, the mean pressure was above the normal in the Canadian Maritime Provinces, New England, the lower lake region, along the immediate middle and south Atlantic coasts, over eastern Florida, a portion of the middle and southern plateau regions, and at